

CACTUS AND SUCCULENT JOURNAL

Of the Cactus And Succulent Society
Of America

Vol. XXIV JAN.-FEB., 1952 No. 1



FIG. 1. *Koala Stapeliaeforme*, Sloane. Two *Stapelia pulvinata* flowers with their interclasping corolla-lobes resemble a Koala bear. Flowered by Boyd L. Sloane. Haselton photo.



CACTUS AND SUCCULENT JOURNAL

Published and owned by the Cactus and Succulent Society of America, Inc., 132 W. Union St., Pasadena, Calif. A magazine to promote the Society and devoted to Cacti and Succulents for the dissemination of knowledge and the recording of hitherto unpublished data in order that the culture and study of these particular plants may attain the popularity which is justly theirs. North and South America \$3.00 per year; foreign \$3.50 by money order. Mail application to SCOTT HASELTON, Editor, 132 West Union Street, Pasadena 1, California. Editorial Staff: THE ENTIRE SOCIETY. Entered as Second Class Matter at Pasadena, Calif., under act of March 3, 1879. Published bi-monthly. We reserve the right to accept or reject advertising or articles sent to this JOURNAL.

Vol. XXIV

JANUARY-FEBRUARY, 1952 (PRICE 50c)

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EDITORIAL

With the start of the 24th year we send greetings to all of our old members and welcome the many new ones. We are grateful for the many kind wishes received during the holiday season. The year 1952 should be a banner year and as editor we hope to try out new policies to see if our JOURNAL can become even more popular to the increasing number of cactus and succulent growers. We are making this one important appeal for members to send informal notes as to their experiences in growing and collecting plants. Some members have been on the list for five, ten, fifteen, and twenty-two years yet we have not heard about their collections. If you will take part in this plan we will give you the unscientific material that 90% of our members want. We admit that this last year has been on the scientific side but it is this type of material that has placed our JOURNAL as the leader of all cactus magazines. Now we are putting it up to you—let's make the March-April issue one that is full of helpful cultural articles. Sit down now and write your experiences in growing and flowering cacti—also send photos if you have them. This will encourage others to do the same.

W. Mastrangel, owner of Rocking Horse Cactus Gardens will continue a series on Practical Cactus Culture with one on Watering—indoors and Out, Light and Sunshine, Air and Ventilation, Plantings, Easy Types to Flower.

Mr. J. A. Johnson, 1416 N. Jackson St., Wilmington, Delaware, would like to contact other cactophiles. Here is a chance to get acquainted.

PHOTOS WANTED

Mrs. Sophia Becker of Arnold, Missouri, suggests that we might run a series of arrangements of cacti and succulents including dish gardens, button gardens, collections, etc. Henry Shaw Cactus Society should start this off with some of their fine photographic records from past shows. As an example of what can be done Mrs. Becker says, "I made an arrangement of Agave leaves last August and won a ribbon for the best arrangement in the show. In October I used two of these same leaves and made another arrangement for the St. Louis Cactus Show and won another ribbon. There are no other plant leaves, except succulents, that can be kept alive for almost two months at the

warmest time of year. Who will send in the first photos with a brief description of the plants and methods used?

ELECTION RESULTS

At the Executive Board meeting of the Cactus and Succulent Society of America, Inc., held Friday evening, December 14th, 1951, the ballots from the election were counted and the following results were reported: For President, Harry Johnson, Jr.; For Vice-President, Mace Taylor; For Secretary, Ethel Rush; for Treasurer, George G. Glade; For the Executive Board for a four-year term: Dr. Lyman Benson, Ladislaus Cutak, Homer G. Rush.

The Executive Board consists of the following persons in addition to those listed above: President Emeritus, W. Taylor Marshall; Junior Past President, Dr. Robert T. Craig. For three more years: Harry Johnson, Sr.; Sherman E. Beahm; Muriel Colburn. For two more years: John Akers; George Lindsay; Robert Killian. For one more year: Dr. Yale Dawson; Howard E. Gates; Nickolas Bokarica.

There are three Ex-Officio Officers appointed by the President at the January meeting of the Board, they are: Librarian; Corresponding Secretary; Editor.

ETHEL RUSH, Secretary.

RECENT VISITORS

Your editor has had the pleasure of visits from the following members: T. MacDougall of New York stopped for a brief visit while on his way to Mexico. Alex Hawkes of Berkeley spent several days arranging with Abbey Garden Press to publish his new 52-page monthly Orchid Journal. Mr. Myron Kimnach and Otto Sokol of the Oakland Affiliate are both well-known for their translations in the JOURNAL. F. B. Wallis, one of the organizers of the Cactus and Succulent Society of America, stopped in and re-joined the group—he just can't get along without his old hobby.

BINDING JOURNALS

You may send your Journals for binding up to February 15th (None accepted after that date). Be sure that each volume is complete, or if copies and indexes are missing, add 50c for each copy or index. You may send back volumes as well as the current Volume XXIII. Send \$2.50 for each volume. We cannot bind other books at this time. Please mail to 132 West Union Street, Pasadena 1, California.

Buy your books from your JOURNAL office—it will help towards a monthly JOURNAL again.

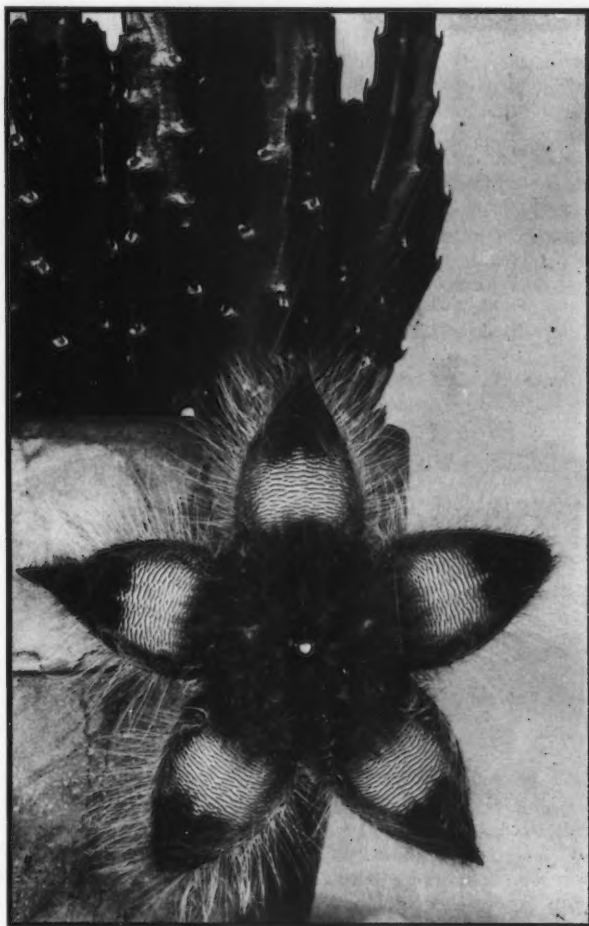


FIG. 2. *Stapelia pulvinata* from "The Stapelieae." Sloane photo.

Francis Masson and His Favorites

By BOYD L. SLOANE

Stapelia pulvinata No. 13

When does a "nondescript" plant become acceptable in the botanical world? That question was answered over one hundred fifty years ago. Here is the story that has come down through the years of a collection of "nondescript" plants that made botanical history.

In 1771, when Captain Cook returned from his first voyage around the world, he landed the accompanying naturalists at Cape Town. One of them was Sir Joseph Banks who remained in the southern part of Africa sufficiently long

to discover the great variety of little known plant life that existed there.

The wealth of this undescribed plant life so impressed Sir Joseph that on his return to England, he suggested to the King that he send a person to the Cape to collect plants and seeds for the Royal Botanic Gardens at Kew. His Majesty adopted the plan, which at the time was so little approved by the public that no one but Francis Masson would undertake the execution of the King's wish.

Masson made two trips to Africa. On his first

trip he remained two and one-half years. He returned for his second trip in 1786. It was during this second stay that Sir Joseph wrote to Masson reminding him that it was hoped that he was at False Bay as directed, as "The most rare plants to be met with in European herbariums are from that place, and you know that one rare described plant is worth two nondescripts."

For ten years Masson remained in the vicinity of Cape Town. During this time he sent home regular invoices of plants and seeds. On Masson's return to England, he resolved to render his time "somewhat profitable to the science of Botany, by publishing his observations on that subject, in the interior of Africa." The result of Masson's resolve was the famous book on his favorite Stapeliads: *Stapeliae Novae or A Collection of several new species of that genus: discovered in the interior parts of Africa. London 1796.*

The "Stapeliae Novae" actually appeared in 1797. It contained figures and descriptions of forty-one species, four of which were known to Thunberg, one discovered by Col. Gordon, and

the remainder all nondescript or new species found by himself.

Number thirteen in the list of Masson's Stapeliads is *Stapelia pulvinata*, one of the loveliest of all Stapelias. It was discovered on Mt. Kamies in Little Namaqualand which is along the coast north of Cape Town. Masson says that the Dutch inhabitants called it "the Arabian Rose." Dr. Sims commenting on this in Curtis' Botanical Magazine, 1810, adds: "the sense of smelling alone is, however, fully sufficient to expel every idea of affinity with that fragrant genus."

The outstanding feature of this "cushioned Stapelia" is the thick cushion of soft purple hairs of the disk and the base of the lobes. All around the edges of the lobes is a dense fringe of similar hairs. The color is dark purple brown with yellow lines across the basal two-thirds of the lobes. The shape of the uniformly brown tips of the lobes have been likened by Berger to a Monk's hood. *Stapelia pulvinata* which was not as important to Sir Joseph Banks as was a plant which had already been described, still remains a collector's favorite.

"So Ya Wanna Grow Cactus"

By WM. MASTRANGEL

Rocking Horse Cactus Gardens

PART I—SOIL

One can get too serious, and again one can be quite practical—with any hobby. So it is with raising cacti. Some people make their hobby so complicated that it soon becomes too burdensome to be interesting. Approach gradually, absorb all suggestions and hints with a grain of salt, carefully weigh and sort for practical usability, and go forward easily, with good horse-sense as a guide.

The most important factor in raising cacti—is soil. Too rich a soil is as unhealthy, as too poor a soil. I have seen some folks trying to raise plants in pure sand; then again I know some collector fanatics who carefully mix eight, ten, or twelve different ingredients together as their basic soil mixture.

Cacti are plants which have adapted themselves to arid regions and usually moderately poor soils. In the wild state, we do, however, find that the healthier and stronger plants are generally those that grow near a tree or bush, where leaf mold is available. Leaf mold is the natural food for cacti and other succulents, and it should always be included in soils for these plants.

Most cacti do well with a soil composed of

three ingredients—top soil, sand and leafmold. Two other conditioners may or may not be added; the first is charcoal, the second is manure (cattle, horse or rabbit manure—well aged).

The ideal mixture when a good grade of garden topsoil is available, will be—one part topsoil, one part concrete sand, and one part leafmold (oak leaf or desert tree leafmold preferably). To this may be added a generous sprinkling of granulated (poultry) charcoal. Concrete sand is available all over the country and is the coarse kind used in cement mixing. Oak leaf mold is also available in the entire United States, Canada and Mexico, as the oak tree is widely distributed. One can usually purchase it at nurseries, and the older it is the better. The above soil mixture should be strained and shaken well through a one-quarter inch wire hardware cloth mesh. This will keep large stones, leaves, sticks, roots, etc., out of the potting mixture.

Some areas of the South, and southwestern United States have silt or clay type topsoils. In this case, the mixture should be—one part topsoil, two parts sand, one part leafmold, charcoal, and the addition of one-half part old, strained manure. The latter will add organic

compounds to the poor topsoil, which generally is rich in minerals only.

In the case of Epiphytes and tropicals such as *Zygocactus*, *Epiphyllum*, *Hylocereus*, etc., the above basic soils can be enriched some by the addition of one extra part of old manure. Peat moss for these tropicals is not necessary since the large amount of leaf mold does the same thing—retain moisture.

Of late years, liquid plant foods, hydroponics and the like have been much discussed. I advise strongly against the use of these preparations, since the cactus collector will get as much success without them by using the proper soil mix, and avoid any danger of overfeeding. Cacti in their natural state get very little food, and are none the less hardy for it. A little sifted leaf-mold spaded into the soil in the top of the pot or bed once a year, will give all the food necessary to your plants. Repotting should take place every two or three years at least; be sure to have drainage, and use at least one inch of gravel in bottom of pot. Cactus beds should be refreshed every year by a thin layer of leafmold and possibly a little manure (both run through a one-quarter mesh).

Lime and gypsum should be used with great care. Contrary to general belief, most cacti do not need much lime. The white haired *Mammillarias*, *Cephalocereus*, *Astrophytums*, etc., need some lime in their soils—either ground up old mortar, or powdered greenhouse lime (a little added to soil once or twice a year). Usually, most tap water is hard (limy), and this generally supplies enough lime for the plants. In case you have soft water, lime may be added periodically in small amounts. Some collectors waste their time in grinding up large amounts of mortar and lime and mixing it in their soils, in useless worry about the lime needs of their cacti. I have been in the barren hills and deserts, admiring beautiful specimens of *Ferocactus*, *Opuntia* and *Mammillaria*, growing in soils with a very low percentage of lime. Most all soil, and sand for that matter, contains some lime—so let's not worry too much about that ingredient.

The sooner we forget about gypsum, peat moss, bonemeal, bloodmeal, cottonseed meal, sulphate of potash, etc., the better luck we will have with cacti. Incidentally, potash is already in your charcoal.

The most important thing to remember about your soil mixture is to be sure that it is porous, and that it does not pack. If it is too heavy and does not drain well, add another part or so of coarse sand and a little more leafmold. Proper soil is sixty per cent of your success in growing cacti. Here in our commercial gardens, where we grow thousands of both native and imported

cacti, we don't fuss too much with them. We do make sure that there is enough food (leafmold) in the soil to keep them growing in good health. Our water is hard, giving the plants enough lime. Since our soil here is of poor quality—we do add a very little decomposed cow or horse manure occasionally.

Keep your soil *simple*, and loose; then your plants will remain happy.

AFFILIATE NOTES OF THE OREGON CACTUS SOCIETY

The Oregon Cactus Society has profited in its summer schedule of visiting at the various members' greenhouses. With the coming of winter weather, however, the meetings have returned to The Overlook Community Center, 3839 North Melrose Drive, on the second Friday of each month. A part of the greenhouse on the property has been allocated to the society's use and a display of cacti and succulents is being made. Visitors are always welcomed to all the meetings.

Mr. Don C. Cluster, program chairman, has arranged a series of lessons covering the various methods of cultivation from seeds and seedlings, through pollination and grafting. Colored slides, loaned through the courtesy of the Beahms Gardens, featured at one of the meetings, were greatly appreciated. At a later meeting Mrs. Alice Dykes, our Vice President, of Milwaukee, exhibited slides of her *Epiphyllum* and orchid cacti in bloom. Prepared papers by well-known authorities, a service of the National Organization to its affiliates, are to be used in the future as soon as arrangements can be made.

A number of our members have made trips into cactus territory with the usual results—more plants and pictures. Mr. and Mrs. K. G. Nelson, of The Dalles, while on a tour of the southwest, spent several interesting and instructive hours as the guests of Mr. W. Taylor Marshall, at The Desert Botanical Garden, Tempe, Arizona. They are now planning a return trip for next year.

Three years ago notices in the local papers asked "All cactus hobbyists" to a meeting on November 18th. The response was most encouraging and officers were elected at the following meeting. Our growth has not been rapid but steady, as we now have members attending from Vancouver, Washington and Gresham, Wilwaukee, Mt. Angel and The Dalles, Oregon.

JOHN R. KELSEY, *Affiliate Director*.

FROM FLORIDA

In going through some old JOURNALS, I read where you asked readers to tell of unusual experiences with cacti.

My ten-year-old night blooming cereus (*Hylocereus undatus*) which has been blooming extensively for the past three summers, formed one fruit this fall. This plant has been mulched and well watered all year around for the past five years. There is great surface root formation and also many aerial roots.

Upon our return home from a vacation trip we discovered the rosy-pink, apple-sized fruit. When the outer petals started to dry, it was picked, chilled and eaten. It was very pretty when cut, with deep raspberry-red rind and white center like a honeydew, except for the many tiny black seeds. In flavor it reminded us of a strawberry.

This summer my two-year-old *Pereskia* bloomed for the first time and that was another thrill.

MRS. G. B. DAVIDSON.

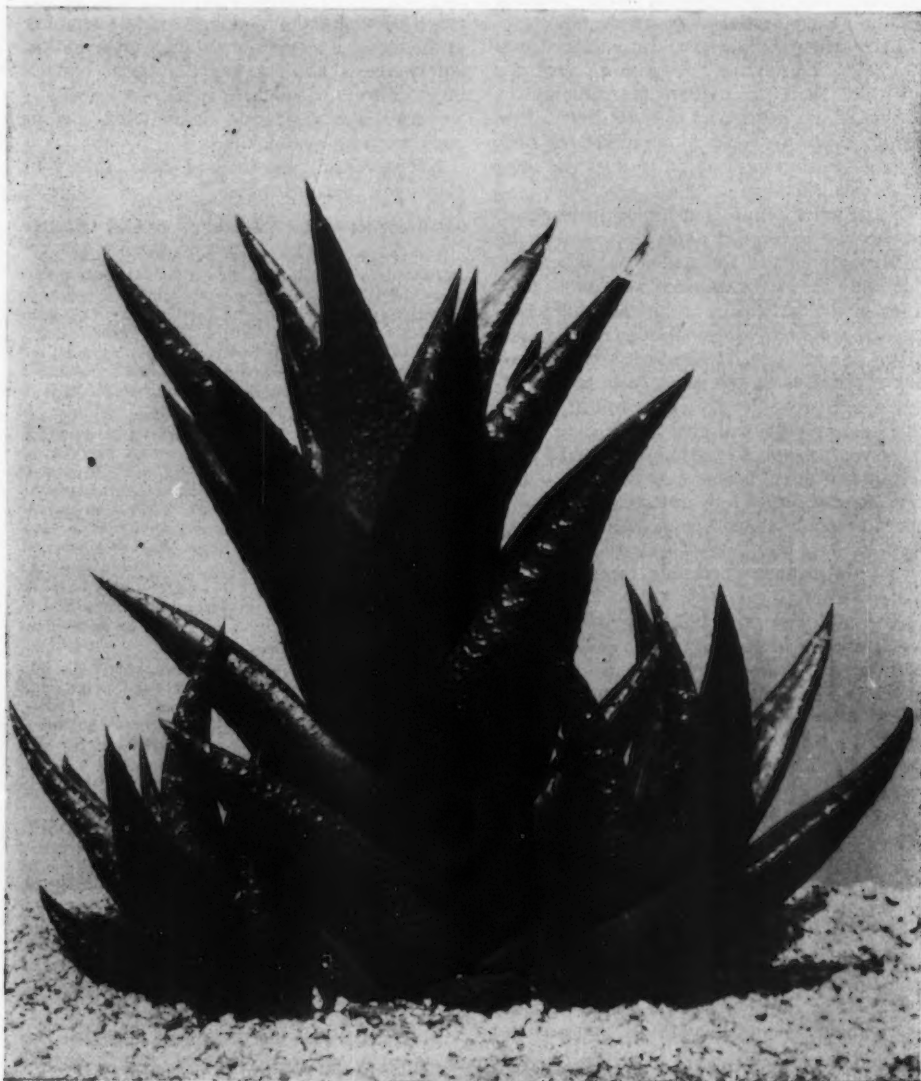


FIG. 3. *Haworthia Sampaiana* Resende nat. size.

NOTES ON HAWORTHIAS

By J. R. BROWN

Haworthia Sampaiana Resende in Bol. Soc. Brot. XIV (1940) 192, in Mem. Soc. Brot. II (1943) 72, fig. 28, a, b. & fig. 29, a, b, c; Resende & Pinto-Lopes in Port. Acta Biol. (B) II (1946) 176, fig. 5 & 8. *Haworthia coarctata* var. *Sampaiana* Resende in Repert.

Sp. Nov. XLV (1938) 177, Poelln. in Beitr. Sukk. u. Pflege (1940) 41.

Plant with a leafy stem to 17 cm. tall, to 10 cm. in diam., sparingly proliferous from the base.

Leaves erect-spreading, somewhat shining,

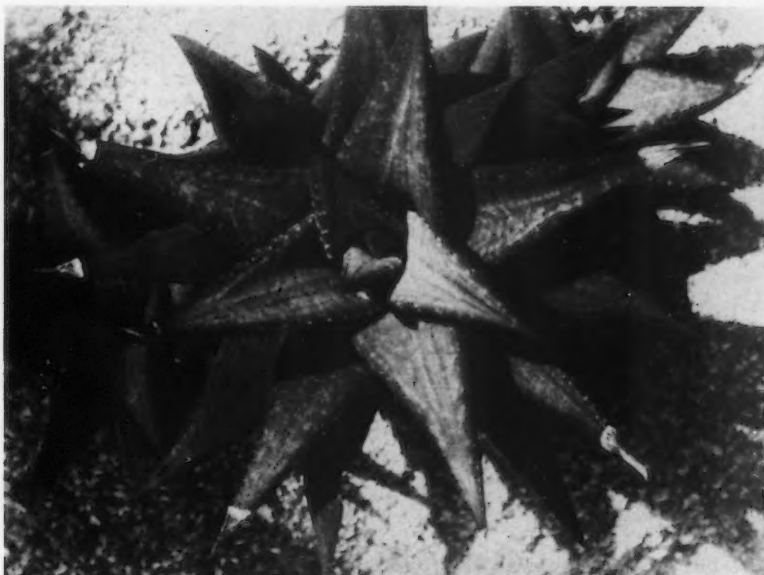


FIG. 4. *Haworthia Sampaiana* Resende nat. size.
Top of plant showing the markings on faces of younger leaves.

deltoid-lanceolate, to 8 cm. long, to 3 cm. broad towards the base, and terminating in a soft subpellucid point; face of older leaves dark green, flat to lightly convex, with a raised median line and sometimes with a few secondary lines, younger leaves concave, paler green with whitish-green spots which become obsolete on the older leaves and with several indistinct lengthwise lines which are indistinctly more or less united; back of older leaves dark green, rounded and somewhat obliquely keeled, with shining concolorous tubercles in more or less transverse rows in the upper part gradually becoming obsolete in lower part, younger leaves with numerous greenish-white lightly raised tubercles, which are arranged in uneven transverse rows in the upper part; margins and keels with somewhat conical tubercles of the same color.

This *Haworthia* I would prefer to place in the sect. *Venosae* rather than in the sect. *Coarctatae* where it is placed by Resende. Resende & Pinto-Lopes, *loc. cit.* illustrate the seedlings of this *Haworthia* and comment on their resemblance to those of *Haw. tessellata*.

The height of this *Haworthia* is given as 17 cm., and as the plant illustrated is now 15.5 cm. tall this height may be exceeded.

The origin of this *Haworthia* is unknown and had been growing in the Botanic Garden at Hamburg, Germany, prior to 1905 when it first seems to have been noted. It was named by Dr.

Resende in honor of Dr. Gonçalo Sampaio.

I am indebted to Dr. Flavio Resende for his kindness in sending me the offshoot of this *Haworthia*, which has now grown into the plant shown in the illustration.

Haworthia Eilyae Poelln. in *Kakteenkunde* (1937) 152, fig., in *Repert. Sp. Nov.* XLIII (1938) 108; J. R. Brown in *Cact. & Succ. Journ.* X (1939) 124, fig.; Resende in *Mem. Soc. Brot.* II (1943) 89.

Haworthia Eilyae var. *Poellnitziana* Resende in *Mem. Soc. Brot.* II (1943) 89, fig. 40a.

Haworthia Eilyae var. *Zantnereana* Resende in *Mem. Soc. Brot.* II (1943) 90, fig. 1c.

Since the time when *Haw. Eilyae* (sect. *Coarctatae*) was described by Dr. von Poellnitz a shorter leaved form has been observed. This distinction has been noted by Dr. Resende, *loc. cit.* who has differentiated the two forms under the varietal names, var. *Poellnitziana*, which is the longer leaved plant described by von Poellnitz, and the shorter leaved form as var. *Zantnereana*. This latter form named after A. Zantner, who illustrates this form under *Haw. Eilyae* in *Beitr. Sukkulantenkunde* (1940) 16 fig. 4 (non fig. 5).

In this Journal, *loc. cit.* I illustrated a plant which has, with age, clearly developed as this shorter leaved form var. *Zantnereana* and an older specimen of this same plant is shown at

this time. Some comparison of the two forms is given below.

Haw. Eilyae var. *Poellnitziana* Resende.

Leafy stems to 20 cm. or more in length, to 4-5 cm. in diam., proliferous from the base.

Leaves about 4.5 cm. long, 11-13 mm. broad towards the base, narrowly-lanceolate, pale green, the young leaves pruinose, and terminating in a short subpellucid point; face of leaves smooth or more or less tubercled with whitish-

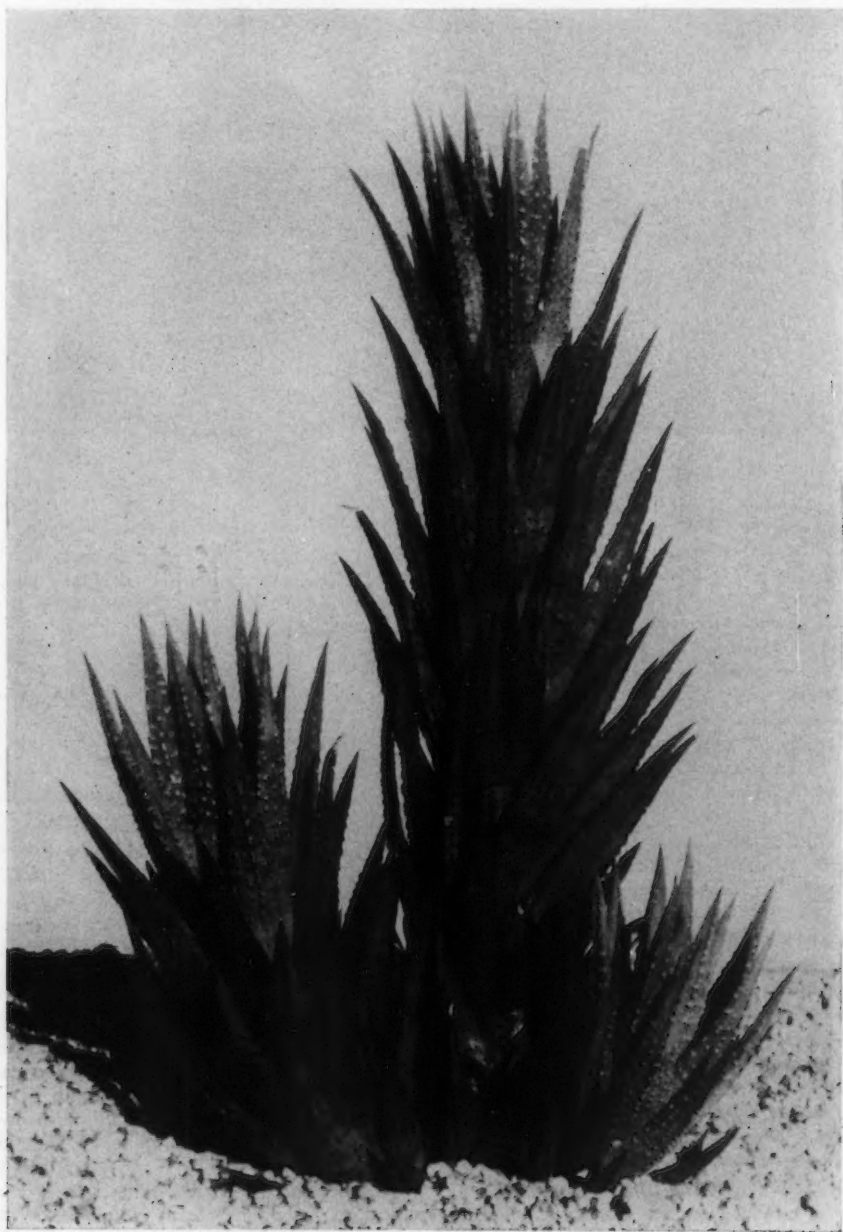


FIG. 5. *Haworthia Eilyae* var. *Poellnitziana* Resende nat. size.

green or concolorous tubercles; back of leaves with numerous larger and smaller tubercles in lengthwise rows, often coalescing, the tubercles on the older leaves concolorous, white to whit-

ish-green on the younger leaves.

Haw. Eilyae var. *Zantnereana* Resende.

Leafy stems to 20 cm. or more in length, to 4-5 cm. in diam., proliferous from the base.



FIG. 6. *Haworthia Eilyae* var. *Zantnereana* Resende nat. size.

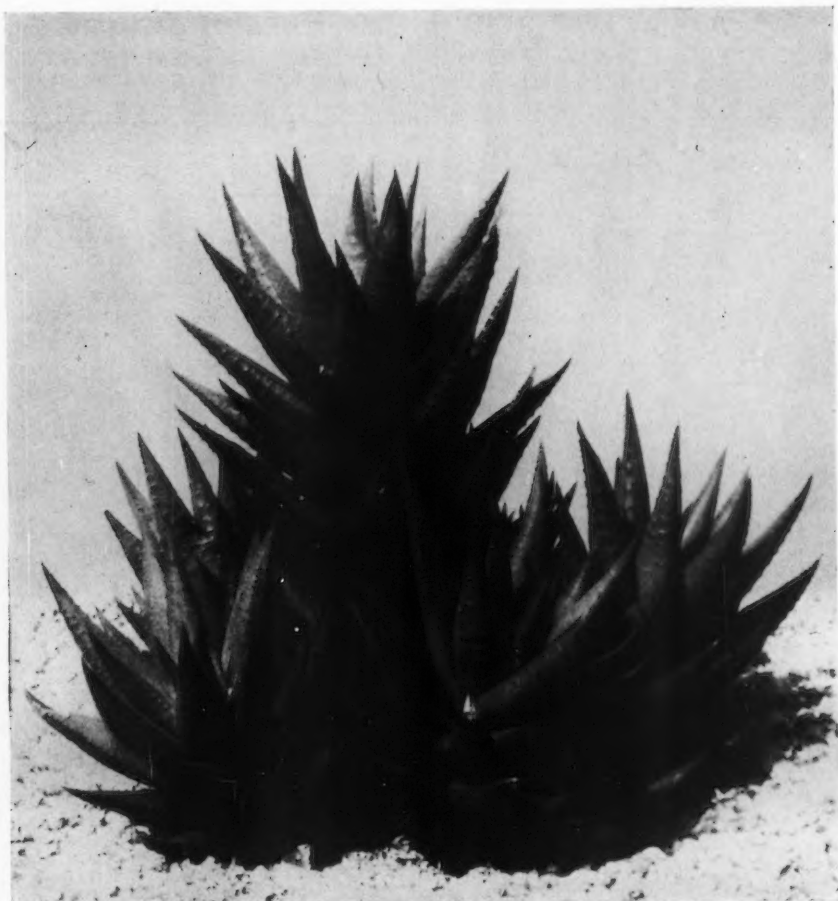


FIG. 7. *Haworthia rubrobrunnea* Poelln. nat. size.

Leaves about 3 cm. long, 13 mm. broad towards the base, ovate-lanceolate, pale green, the young leaves pruinose, and terminating in a short subpellucid point; face of leaves smooth or more or less tubercled with whitish-green or concolorous tubercles; back of leaves with numerous tubercles in lengthwise rows, often united transversely, the tubercles on the older leaves concolorous, whitish-green to white on the younger leaves.

It will be noted that the chief distinction is the length of the leaf. The leaves measured were very uniform at a length of 4.5 cm. and 3 cm. respectively. The breadth of the leaves of var. *Zantnereana* were very uniform at 13 mm., but those of var. *Poellnitzzeana* often scarcely attained to 13 mm. The tubercles on the back of the leaves of var. *Zantnereana* seem to be more uniform in size and more solitary. Plants of var.

Poellnitzzeana may attain a greater length of stem as it seems to be more vigorous. The stems of both forms are decumbent with age, and the leaves are often lightly recurved towards the tips.

The plant of var. *Zantnereana* was received by me as collected at the same locality as that given by von Poellnitz when he described *Haw. Eilyae*, namely, Cape Province: Kleinpoort. The plant of var. *Poellnitzzeana*, and which is illustrated here, was kindly sent to me some years ago by Dr. Flavio Resende of Lisbon.

Haworthia rubrobrunnea Poelln. in Repert. Sp. Nov. XLIX (1940) 57; Resende in Mem. Soc. Brot. II (1943) 89, fig. 35c.

Plant with leafy stems about 10 cm. tall, about 5 cm. in diam. and proliferous from the base.

Leaves erect-spreading, somewhat incurved towards the tip, ovate-lanceolate, acuminate, to 4 cm. long, 9-14 mm. broad towards the base, with several indistinct, darker lengthwise lines, and terminating in a subpellucid, short point; face of leaves flat to lightly rounded and more convex in upper part, usually smooth but often with 1 or 2 lengthwise rows of concolorous tubercles; back of leaves rounded, somewhat obliquely keeled in the upper part, with numerous concolorous tubercles in more or less transverse rows, smooth towards the base; the margins and short keels with very small tooth-like tubercles, subpellucid, concolorous or whitish-green.

Dr. von Poellnitz compares this *Haworthia* of the sect. *Coarctatae*, and which he received from Kew without locality, to the little known *Haw. Peacockii* Baker, stating that it differs by the narrower leaves, reddish-brown color, face not concave, and the tuberculate back. It would also seem to be a much shorter plant as the main stem (of plant illustrated) has increased but little in length during the past year. It was named because of the reddish-brown coloring of the leaves as seen by von Poellnitz, but this may have been a very dormant stem. The plant shown in the illustration and growing outdoors here, where one would expect any coloring to be intensified, is more of a dull brownish-green.

I am indebted to Dr. Flavio Resende of Lisbon who kindly sent me this *Haworthia* some years ago.

AFFILIATE NEWS

The Long Beach Cactus Club met at the home of Mr. and Mrs. John Klenke in Wilmington. A short business meeting was conducted by the President Mr. R. S. McGaughey, after which a plant auction was held, from plants donated by members. A goodly sum was raised for the Cactus Convention fund.

Mr. Homer Rush showed colored slides of Arizona deserts and cactus gardens that he visited, with Mrs. Rush as commentator.

Mr. and Mrs. Mace Taylor, Jr., opened their new home in Garden Grove for the November meeting of the Long Beach Cactus Club.

Mr. R. S. McGaughey, the President, presided. A report of the Nominating Committee was read and a unanimous vote placed the following persons in nomination: Pres., Mr. R. S. McGaughey; Vice-Pres., Mace Taylor, Jr.; Recording Sect'y, and Treas., Mr. W. S. Bell; Corresponding Sect'y., Mrs. Ruth Manchester; Publicity, Mrs. Sue H. Loomis; Librarian, Mrs. Clara Hoskins; Board of Directors, Mr. George Miller; Mr. E. J. McIntosh; Mr. R. H. Keck and Mrs. George Randall; President Emeritus, Mr. John Klenke.

Two new members were elected to membership. Mr. Mace Taylor gave an interesting talk on preparation of soils for pot and flat use, showing different types of combined soils and organic substances for seed and cutting growth, water contents, etc. A plant

auction was held; all proceeds being turned over to the Convention fund.

MRS. SUE H. LOOMIS, *Publicity Chairman*.

AFFILIATE NEWS

The September meeting of the Los Angeles Cactus and Succulent Society was held at the home of Mr. and Mrs. John Akers. Vice-President Bokarica presided at the meeting while President Rush took a day off. Several new members were taken in and a very successful plant auction was held for the benefit of the Convention fund. A very fine talk on grafting, given by Mr. Hubert Monmonier, was enjoyed by everyone. The grafted plants were then offered to the highest bidders and the money added to the fund.

The home of Mrs. Rose Goodloe was chosen as the site for the October meeting. The meeting was held under the trees in the large garden and was presided over by President Rush. After the meeting was finished a talk was given by Mrs. Rush, illustrated by colored slides of a trip which they had taken through southern Arizona, as it was very warm, the pictures were shown outdoors as soon as it became dark.

The November meeting was held November 4th at the home of Mrs. Lucie Wagner. It was decided to publish a five page bulletin, beginning with the first issue to be in the hands of our members by the meeting of January 2nd. It was suggested that we make our bulletin available to other clubs by yearly subscription. Following this meeting Mrs. W. F. Mayall gave a fine account of cactus collections she had seen and photographed in the eastern United States and some in Canada.

ETHEL RUSH, *Correspondent*.

FROM ENGLAND

I have grown Cacti for over thirty years without flowering a single plant, until this summer. As the circumstances connected with the blooming of this Cactus are rather unusual I think they may interest "Cactus" readers. In May, 1950, I bought a small *Rebutia xanthocarpa* in a 2½ inch pot. It had from four to six small flower buds and instead of opening, these promptly died as soon as I got the plant home. During the summer of 1950 the *Rebutia* made little or no progress in growth. I wintered it as I did my other Cacti, giving no water, and in the spring when I started watering it showed no sign of life. In June, thinking it was dead, I put the pot in the garden and forgot it. A few weeks later I saw there was a flower bud on it. This bud opened on Sunday, 5th August, about 10 a.m. Summer Time, in bright sunshine and remained open until about noon when the sky became overcast. It then closed, and partly opened again on the morning of the 6th August. It did not open again.

Considering that *Rebutia* is a native of South American countries where the climate is very hot and dry, it does seem unusual that it should flower and grow so well when turned out into our changeable weather. During this summer we have had many cold, wet and sunless days, and some very cold nights.

PHYLLIS H. M. ARUNDEL.

Mrs. Frank Cariss, Librarian of the Society, has made an extensive collecting trip to Central American countries and on into South America. We hope that she will tell us about her experiences and the cacti she observed.

Paul Hutchison of the University of California, Berkeley, spent ten days into Andes up Rio Aconagua to Caracoles just west of the Argentine border. He is now starting the main part of the expedition in Chile.

Your JOURNAL has not increased its price in twenty years—give it your support.

ROUND ROBINS

Now, for a report on the various letters and there are so many interesting ones, I do not know what to leave out. The director of "Rain Forest" Plants, Mr. Watkins of Spokane, Washington, proudly announced that his Robin had made its initial trip in just 35 days. This is a record! This Robin not only called on seven members in the United States but made two stops in New Zealand as well. Using airmail helped considerably and then our members here were all on their toes. Mr. Cutler of Auckland, New Zealand, in his letter wrote that he found that he had better success growing Epiphyllums in wooden boxes 12 inches square as they do not seem to dry out so quickly. He arranges his plants in rows beneath a natural canopy of ti-trees which are 12 feet high and have thin trunks and an umbrella of one-half inch leaves. This forms a complete shelter but allows plenty of sunlight to come through. The trees are evergreens as are practically all of their trees over there. The Epiphyllums are moved into a glass house when the buds show and then later put out again around Christmas. That is the treatment they use in New Zealand, in his locality, and he adds that there will be a blaze of colour about the 25th of October which is their Labour Day. He also told of another interesting thing. "A chap over here has one *Zygocactus* five feet across and he has to haul it up with a block and tackle when he reports it. He has it in a half barrel and uses a lot of sheep manure. He counted 3,000 blooms and then got tired. It is growing on its own roots and blooms in June and July." Mrs. Camelbeck of Hudson, New York, expressed her thanks to this Robin for helping her in making her first grafting operations. She used a pad of *Opuntia* and slit the tops and one side using a razor blade. She put two slips of Christmas cactus in—one in each slit. Then she dusted them with charcoal and used rubber bands to hold them together. Mrs. Madge Shields who is on the committee of the Christchurch branch of the Cactus and Succulent Society of New Zealand, wrote that she lives in a very pretty fruit-growing valley of mostly apricots, about two miles from the sea. She has a great many plants and when she mentioned having two glass houses, I think she must have heard the sighs from the rest of us, purely envy. I wish I could share more of the letters with you but space will not allow.

Cactus and Succulent Round Robin No. 5 will be on its feet soon with Mr. Lewis Valachonis of Johnstown, New York, as its director. I had an interesting letter recently from Mr. Valachonis in which he wrote: "I took cuttings from my orchid cacti (*Gloria*) which has about 100 blooms each June. Some I planted, some I gave to friends while others I put in water. One of those I put in water started rooting and then all of a sudden it started budding and had four fine buds which bloomed in October. My wife used two of the blooms in a corsage with a gold braided bow on her black "topper" coat. And I might add that all this took place without the aid of a greenhouse. Mr. Valachonis also wrote that he has crossed three orchid cacti and the "new breed" he has called Ann Marie Valachonis after his daughter. He writes that it is a combination of vivid orange red, cup style; and lasts about a week. The stamens are shiny cream and the pistil off-white.

We were all glad to get Mr. John Bock's resume of the Society's Convention and a description of the interesting vacation trip that he and his wife made through California and Arizona, finding native cacti to bring home and also about his call on Guy Quinn, and some of the other cactus collectors.

The Robin for the amateur exhibitors is on its way.

We can squeeze in one or perhaps two more members so if any of your have put off writing to me, do it now and I shall try to get you in on its initial flight. Mrs. C. E. McGuire of Isabel, Oklahoma, was the first one to join and her comments to what was written in the last issue about this Robin were as follows: "What could be better for a name than 'Let's Exhibit' Round Robin? We wouldn't want to say 'Let's Exhibit or Bust,' would we? By all means let's exhibit our 5 & 10 cent store plants. Nothing can equal the thrill of seeing a familiar plant in glamorous surroundings—and who could deny that gold metallic paper and black suede paper and colored pottery adds glamor to the romance of cacti. Our best plants are, of course, dear to us but to the uninitiated they are just another kind of cactus." Many of you mentioned in your letters how much you enjoyed Mr. Johnson's article, "Let's Exhibit." Maybe we can coax him to write us another after the Robin has made a few rounds.

Mrs. Gladys Panis of Falmouth, Massachusetts, has taken over the duties of directing International Round Robin No. 1. The membership has increased since we first started out with its original four members.

Some of the new members who have joined the groups are Mrs. Gladys Somerton of Amherstburg, Ontario, Canada; Mrs. Madge E. Shields of Christchurch, New Zealand; Miss Marjorie Silvers of the University of Tennessee in Knoxville, Tennessee; Mrs. Fred Bernhardt of Chicago, Illinois; Mr. James A. Robbins of Tucson, Arizona; and Mrs. J. A. Anderson of Wilmington, Delaware.

We were pleased to hear from one of our newer Robin members, Mrs. Fred Mayall of Burbank, California, in an article called "To Water or Not to Water." As a companion to this article, let's have one from you who raise cacti in the colder climates as to your watering methods.

I expect to have some notes for you on the Euphorbia Round Robin in the next issue. There has been a great deal of interest shown in the Euphorbias and we have had so many last minute changes in the routing of this Robin in order to include new requests to join it that I have not been able to get hold of it long enough to make excerpts of the letters.

The following Round Robins are being organized and room for more members is available: Cactus and Succulent R.R. No. 5; Mamillaria R.R. No. 1; Echeveria R.R. No. 1; Haworthia R.R. No. 1; Dish Gardens R.R. No. 2; "Rain Forest" Plants R.R. No. 2.

This is about all that I can cover this time, but will have more to tell in the next issue and, meantime, please don't put off writing that letter you fully intended to write when the Journal first arrived. Only one sentence on a postal will do—"place me in a Robin"—and that will I do!

MRS. MABEL H. FAY
123 North Avenue
N. Abington, Mass.

The Epiphyllum Society of America is especially fortunate in having one of its members, Homer G. Rush, as chairman of finances for the coming biennial convention of the Cactus and Succulent Society of America. With his help we should be able to do our part in assisting with the financing of the convention. It will be held too late in 1953 to enable our Society to show a maximum amount of flowers.

SOME RESULTS OF TWENTY YEARS OF CACTUS RESEARCH

By CURT BACKEBERG

PART V

An index to the Latin names in Part III¹

By E. YALE DAWSON

Names currently accepted by Backeberg are printed in SMALL CAPS. Invalid, rejected and synonymous names are printed in *Italics*. Where a name appears more than once, the most important page number is printed in *italics*. The page numbers indicated are for volume 23 of the CACTUS AND SUCCULENT JOURNAL for 1951.

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¹This index includes corrections which will appear in the reprint edition to follow.

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NOTE: Some of our non-technical members will be aghast at the above index. Students and taxonomists will appraise it as one of the most valuable contributions that has appeared in this JOURNAL. Those, who do not agree with Mr. Backeberg, will be the first to use and profit from the twenty years' research of the author. The JOURNAL pages are open to all who strive to know more about cacti and time will test the varied theories that are published. We are indebted to Dr. Dawson for a complete index. Those who have compiled an index will appreciate the endless hours that are required for a work of this kind and taxonomists will be forever grateful to Dr. Dawson. S. E. H.

HELP WANTED By the Research Board

Listed below are a few of the things which the members of the Society can do to help along the work of the Research Board and its numerous Sub-Committees.

First of all, whenever you make a trip and collect any plants of cacti or the other succulents, collect a plant or two and send them to the Research Board, along with all data about the locality where the plants were collected, the type of soil, the altitude, surrounding vegetation and whether the plants were scarce or plentiful. If you are a camera enthusiast, take a couple of pictures of the plant before taking them up and send them along. Always remember that nearly every state has one or more species of cacti growing native within its borders, so your own state may be one of those where plants are native.

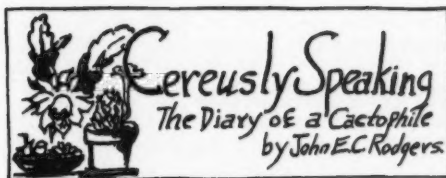
Next, if you have reasonably good duplicate colored slides of your plants or of any of your collecting trips, the Research Board would very much appreciate any that you would care to send, as the slides so received

are made up into slide sets for the use of the Affiliated groups. Please be sure that you label the slides.

Black and white photographs of plants are always welcome and are a great help in identifying plants sent in for that purpose. We can use all of these that you would care to send.

Now we come to the hardest one of all—translators. We have many fine articles, books and papers, which if translated, could be made available to all the members, through the pages of the JOURNAL, and would be very helpful to you in learning more about your plants. If you can spare the time and can translate either German, French, Czechoslovakian, Dutch, Portuguese or Spanish, offer your services and we will gladly furnish the material for translation.

There are numerous other ways in which you can assist the Research Board but this will do for a starter. Let's hear from any or all of you who would like to take a more active part in the work of your Society. Address all communications to The Research Board, Homer Rush, Chairman, 820 W. 115th St., Los Angeles 44, California.



Dear Readers: Like James the Ancient Roman God of beginnings I plan to look both into the past and the future for my 1952 column. Several have suggested that I do my column in this manner. I hope you like it if not I'm open to more suggestions.

Cactus and succulent catalogues are one of my winter listening posts. From these I get the "trends" from the dealers who have collected the seeds in far places and grown the plants to selling-size. In the catalogues I gaze and dream of things I'd like to do, places I'd like to visit and plants I'd like to see. Since I can't travel and collect I do the next best thing, I buy the plants and wait patiently for them to grow to the size where the dream originally began. Once in a while I lose interest and forget the romance of these plants but most of the time the dealers original sales talk in his catalogue (or other method) last. I do not blame my back sliding on the dealer but to my inexperience with these rarities that every cactophile graduates to or thinks he has.

While the collector is dreaming of his successes with the plants he has ordered or has bought, the conscientious grower has a duty to fulfill as well. He should know "territorial" weathers so that he does not ship plants to cold places where the dream originated. Winter should be for dreams, getting the lists ready for cold regions and sending off the lists. Spring is the time for deliveries, potting up and giving them the "green light" for the summer and fall growth, winter rest and storage for adjustment to the individual cactophile's own growing conditions.

Most of the "converts" to our ranks are surprised to know that there are catalogues to study and dream over. I have suggested to the Woolworth, Kresges and Grant Store managers of plant concession in this district that they stock up with a few books such as "How to Grow and Bloom House Plants Successfully" by Leonard Wall; also short printed directions as to how and when to pot, etc. (Some stores of these chains have done this long ago in eastern cities.) These companies buy from local growers who grow a variety of plants and succulents. Most people buy the small plants in 2½ inch pots. These dry out rapidly which cause the buyer to drown or neglect them. I've talked to enthusiastic buyers. They admit that they don't know much about plant needs. They replace the same kinds many times with the same results—disappointing looking plants, loss of color and lack of growth when they survive. They did not know that these 2½ inch pots were merely the "cradle" step in the plant's growth. They usually marvel at a neighbor who has "cactuses" but they say that she has a "green thumb." They do not seem to know what she does but they are certain she repots them, but they're afraid they'll lose the cactuses.

Talking to the clerk at the stand usually furthers the need, but she admits she can't do anything as she's too busy or the manager has to be seen.

The greenhouse men are usually unable to supply cultural directions other than the "barest of details" or a bag of special soil mixed as they mix it. The soil gives a good return and the turnover is large so why worry. So the inflationary 5 & 10's (now 25c, 50c & \$1.00) buyers of which vintage most of us

attribute our collecting zeal go ahead encouraging and discouraging the "converts" to our hobby. I lost them a plenty before I got a U. S. Department of Agriculture circular No. 66, June, 1929—"Cacti" by David Griffiths and Charles Henry Thompson about 1930. If it hadn't been for the list of books of reference used in this bulletin I'd still be in the "Dark Ages" as a cactophile. It spurred me on to go to the Cleveland Garden Center where I heard of the nearest cactophile Eugene Ziegler of Spencerport, New York who told me of books, plants, catalogues, etc. (1932). I read his article in Vol. I, No. 10, April, 1930, of our Journal pages 194-196 on growing cacti.

Most beginners read too little and collect too fast, consequently their losses are high—and their enthusiasm suffers. In stores with a small turn-over the cactus and succulent plants often remain in such poor growing conditions that etiolation, exhausted soils and over-watering have already ruined them before they are sold. Such plants are poor risks at any time. Most florists spoiled their succulent business several years back through unrelated groupings of "wet" and "dry" plants in dish gardens. The wave of succulent buyers was spoiled by heavy losses due to poor information on care of same and the lack of encouragement through not knowing other "collectors" and not being able to locate books, etc.

Most people say that there will never be a large following for cacti and succulents but from my "travels" I am convinced that there is scarcely a person that does not remember some "cactus" that he had at home when he was a child. He doesn't know what happened when the old home was broken up but he'd like to have one now. In Europe nearly ever home has some among the prized house plants. In most of the homes of the school children I know, a "Cactus" is never refused. I give out my breakings, cuttings, offsets, etc., to as many of the eager children as I can. Each time a local bazaar is held I contribute plants as well as pieces—none ever go begging for a home. Why then do we get so little response as individuals? I think it's our lack of enthusiasm, our luke-warmers, and our own forgetfulness of the great joy we felt when we first began to collect. To transfer that type of selling enthusiasm to others we must be able to recognize successes in others as well as our own failures.

At this stage a club of cactophiles should be organized to keep the interest alive when some become discouraged from first losses. This stage also helps to get replacements by exchange and gifts, as well as new species to build up collections. Besides plants the pooled books, clippings, pamphlets, catalogues, etc., become a nucleus for a club library. Culture successes as well as failures are exchanged and another group of cactus and succulent compatibles are launched. Some of my rarities came from the Midwest Cactus and Succulent Society members. I organized it in July, 1936. At this time I had the names of 200 or more interested in cacti and succulents. For the cactus and succulent exhibit at the Great Lakes Exposition in Cleveland I visited many of these. I found it was difficult to convince these folks that their plants were excellent enough specimens to exhibit. When convinced they were delighted to exhibit.

At the time of my visit I usually had some books, magazine clippings and catalogues along to show them that there were other places than "5 & 10's" to get plants. I also told them of my own disappointing experiences with South Westerns bought in "berry boxes." It helped to restore confidence when I told them they did not bloom more than the first season for me either when they did bloom. More often they died from too heavy soils and mistaken ideas of their

Continued on page 32

PRINCIPLES OF PLANT REPRODUCTION

By R. C. PROCTOR

PART III

Continued from page 156, Vol. XXIII, No. 5

Flowers

The flowers are the most outstanding features of the angiosperm plants. They are the most efficient seed producing organs that have evolved in all the vegetable kingdom, and are wholly consecrated to the service of the next generation. A simple flower like the lily is typical of the bisexual types, which we cactus fanciers are mostly concerned with, and will serve to illustrate the parts.

The lily flower, like all flowers, is a highly specialized branch of the plant that bears it. On the outside there is a set of showy leaves that are divided into two series; the sepals and petals of which there are three of each to a series. The outer series, the sepals, is the calyx. The inner series, the petals, is the corolla. Inside the corolla are six stamens, the male organs, each consisting of a thread-like stalk, the filament, on the end of which is born the anther that contains the pollen. In the center of the flower is the pistil, or female organ, which consists of an ovary (the enlarged base), a style (slender

stalk) and, at the outer end of the style, the stigma which is a broadened tip. The ovary contains the ovules that become seeds—if properly fertilized. (See Fig. 90, pg. 158, Vol. 23.)

A cactus flower is constructed on the same principle as the lily, as are all bisexual flowers. But a cactus flower, unlike a majority of other flowers, is said to be inferior; that is, the ovary is below the petals and sepals instead of being above them. A hypanthium tube may extend from two to ten inches from the ovary to the petals; mostly in the nocturnal flowers such as *Echinopsis* and *Selenicereus*. Or the tube may be short or wholly lacking as in some *Opuntias*. There are several series of sepals and petals which often intergrade with one another and are sometimes arranged in whorls; a sort of fusion of the calyx and corolla that is called the perianth. The stamens are very numerous, in fact, more so in the flower of *Carnegiea gigantea* (Giant Saguaro) which are from 3500 to 4500, than in any other flower of the vegetable kingdom. There is only one pistil with its single

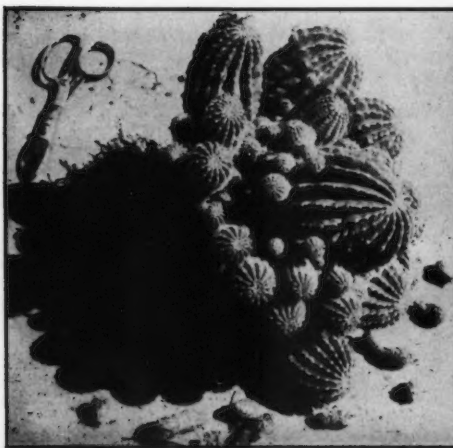


FIG. 8

A typical *Echinopsis* that grows all pups but no flowers. The fast multiplying pups should be removed (not the ordinary normal growth of branches and offshoots) and the excessive root system, if flowers are desired.

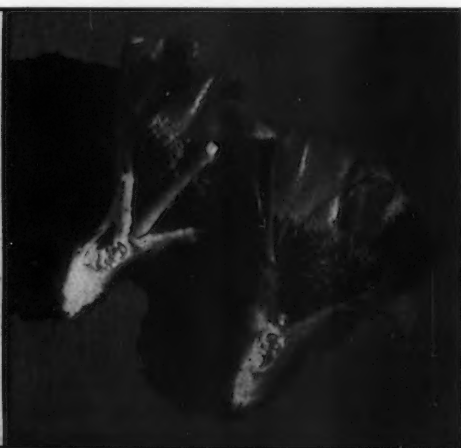


FIG. 9

Cactus flower of *Opuntia basilaris* cut in two parts. Left: The thick style and unopened stigma is shown. At bottom, beneath the style, is ovary containing the as yet unfertilized ovules. Each pollen grain must make its own tube through the style.

style, but its stigma is segmented into several lobes when it is fully expanded for the reception of pollen.

Outside the cactus family there are a few types of flowers that are unisexual. That is, the male and female organs are not both present in the same flower but occur separately with the pistil in a female flower and the stamens in the male flower; hence, a unisexual flower is either staminate (male) or pistillate (female). With some species both male and female flowers are born by the same plant. There are also unisexual plants; their flowers are exclusively male or female but the bisexual plants and flowers are by far in the majority.

Some flowers are self-fertile but a great many of these are self-fertile by second choice only. That is, they pollinate themselves as a last resort when no insect or wind arrives, before the petals close, in time to do the job of self-pollination. But in both cases it is believed that the flowers are slowly declining because nature abhors self-fertilization.

Pollination

There are various methods by which pollen reaches a stigma. The pollen-bearing anthers of some flowers are in close proximity to the stigma so that the pollen, when it is released, can make an immediate contact with the stigma of the flower in which it occurs. Such flowers are said to be self-pollinating but if one would examine the flowers of a considerable number and variety of plants he would notice that such close proximity of anthers to stigma is the exception rather than the rule. In fact, most flowers are so constructed that it is impossible for self-pollination to take place, or at least it is extremely difficult and less likely to happen than is cross-pollination; that is, by the stigma receiving pollen from another flower. While most flowers are perfect—having both male and female organs—they usually have some means by which cross-pollination is facilitated.

Except for the few cleistogamic types and the freaks, cactus flower stigmas and anthers are not in close proximity to each other. In most cases the stigma extends out or above the anthers so that the pollen, when it is released by the anthers, cannot make contact with the stigma lobes. But even if it could the stigma lobes would not be fully expanded to receive it until later when the pollen has lost its potency or otherwise become ineffectual. Therefore, if fertile seeds are to be developed, live pollen must be brought to a stigma from other flowers than its own and when its lobes are expanded, or separated, to receive it. This function is performed by bees and other insects that are at-

tracted by the pollen and nectar which they receive in payment for their cooperation.

It follows that cactus flowers are not self-fertile even though they are bisexual. In fact, they are so constructed and timed for the proper reception of pollen that only by the remotest possibility could a flower be self-fertilized. Nor will it accept the pollen from another flower of the same plant so long as other pollen—from its own species—is present. The cause may be attributed to what is called "prepotency of outside pollen" and the aid that is rendered to outside pollen by the chemistry of a style in elongating the sperm membrane of a pollen grain to form the pollen tube more quickly than the local pollen which is seldom, if ever, timed right for the stigma to receive it.

A few misunderstood facts concerning pollination and fertilization have been cleared up very nicely in *The Epiphyllum Handbook* by Scott Haselton which I quote from page 189:

"Nature seems to have proven that pollination between flowers of different plants of the same kinds, or closely related varieties, is preferable for greater vitality than self-fertile flowers. The intricate adjustment between flower and insect bears out this conclusion. Watch a plant flower and unless conditions are favorable for pollination most of the spent flowers will drop off without setting fruit. If they were self-fertile this would not be the case. One may believe a hybrid is self-fertile if a single flower sets fruit, but later observation will show the failure of the fruit to mature, or the seeds will be sterile."

The truth of the above statements have been pretty well born out from my own experiments but if your, so believed, self-fertilized cactus produces an offspring then in all probability it received pollen from another plant... and possibly from another, but compatible, type.

Hand pollination might possibly, in a blue moon, effect some sort of self-fertilization of a cactus flower if the pollen from its own anthers can be transferred to its stigma when both are timed just right for this part of the process of conjugation—but the results would be extremely dubious.

On the other hand, I have found that hand pollination can be very helpful where fertile seeds is the object and there is a scarcity of plants in cultivation, or particularly in locations or glass houses where there is a scarcity of flying insects. In fact, hand pollination is very necessary in any small cactus collection if considerable numbers of other flowers are in the vicinity to compete for the attraction of the bees and other insects; especially if the insects favor the other flowers. There is, of course, a special kind of insects that pollinate the Night Blooming

Cacti on the desert so, needless to say, some of these must be hand pollinated if fertile seeds are to be expected; except for those types that remain open part of the following day when the day flying insects may be attracted.

Which reminds me of an experiment I have made with the night-blooming *Peniocereus Greggii*: On the desert there are certain kinds of night flying insects—a moth, for one—that pollinates the *Peniocereus* but they are absent on my plot of ground when my 150 *P. Greggii* plants are in bloom, and for years not one of them produced a fruit. Two seasons when the Mrs. carried pollen on a tiny brush from flower to flower—repeating the process several times to mix the pollen from the various plants because some plants and pollen may be sterile—the results were amazing. By a rough guess, 90 per cent of the flowers developed fruit; not ordinary fruit but exceptionally large, lush, red berries that were jam-packed with shiny black seeds. Another season when the flowers were self-pollinated by hand, or the attempt at such—you guessed it—no fruit.

Now I am convinced of the effectiveness of hand pollination, and that it is a reliable method of fertilization for producing fruits from cacti in cultivation—especially where they are far from the native insects of their natural habitats. Except in a few cases of easy fruiting plants, such as *Eriocereus Martinii*, which seems to outflower all night bloomers and appeals to any and all kinds of insects—night-flying or day-flying.

And, incidentally, *Eriocereus Martinii* is, in my opinion, the easiest of all cacti to grow in cultivation. The plants thrive in wet, dry, hot or cold climates. They are very prolific bloomers and fruiters, producing flowers faithfully every summer and fall in sunshine or shade, barring freezing weather, of course, and crowded conditions. A cutting or seed produces large climbing stems and branches in no time. The large white flowers with green throats are a credit to any garden. More people, especially those in foreign countries, should grow them for their flowers, fruits and a trouble-free plant.

But getting back to the main subject of pollination: To develop seeds it makes no difference how pollen reaches a stigma so long as it is alive and the stigma is receptive to it—and the agents of transportation are varied.

Cactus flowers, however, are adapted to insect pollination although some pollen, no doubt, does reach a few stigmas in some other manner. But these flowers are so constructed that wind pollination is almost impossible or, at least, highly improbable. The cupped-shaped corollas provide a high degree of wind protection and are fully expanded, flat, only during absolute calm. In most cases the petals will close upon the anthers during a rise in humidity or a drop in temperature and when prolonged shade occurs from a cloud passing over the sun. Such reactions of the petals to the elements is a protection to the pollen against wind, rain and unfavorable temperatures. On the hottest days in the desert the petals unfold late and close early, and vice versa during the cool weather of early spring—a time when they reopen for several days unless a sudden heat wave sweeps over them. It is only during a period of complete calm that the night bloomers' petals curl back into a reflexed arrangement. The pollen of insect pollinated flowers must be protected and conserved for the cooperative insects which are the most efficient pollinating agents of all.

Insect pollinated flowers display many and varied colors as an attraction to the insects, but whether this is true or not what really attracts them is either the pollen or nectar. The petals provide a landing strip for the insects and the lines and colored veins, probably, lead them to the nectaries—where there are any. The irritability of the stamens that causes them to close upon the pistil (but not completely) when touched by the finger or an insect—as mentioned by J. Borg in *Cactus*, page 14—is a mechanical operation that ensures the insect of a generous coating of pollen before he can leave the flower. However, it must be realized that some plants and flowers have lost some of these devices, or reactions to certain outside influences, after a long life or several generations in cultivation.

Concluded in next issue

CACTUS FLOWER MECHANISMS FOR CROSS POLLINATION

Cactus flowers are not constructed for self-pollination although they contain both male and female organs, and these four illustrations will bear out that-upoint. Upper left: *Epiphyllum hybrid* (Orchid Cactus). The stigma is held aloof from the anthers. When the anthers straighten out so will the style and stigma. But even if pollen (which is all gone) did reach the stigma it is not likely that it would take unless it was from another flower. Upper right: *Echinocereus triglochidiatus* (Claret Cup Cactus). Here the stigma lobes do not open until the anthers have shed their pollen; by that time, and when the stamens spread, the pollen will be gone besides being ineffective. Lower left: *Acanthocereus pentagonus* (night bloomer). No pollen can reach this stigma from these anthers. And even if it could, the stigma will not be fully open until later, after the pollen is all shed or dissipated. Lower right: *Echinocereus pectinatus* var. *reichenbachii* (Lace Cactus). Here again the stigma lobes are extended up or out away from the anthers. The stigma lobes are open to receive pollen, but the pollen has all fallen from these anthers that are split open after dropping the precious dust. Pollen from this flower would fertilize another flower but, as in every case, it was not timed right for this flower.



FIG. 10



FIG. 11. (6 K) *Echeveria Craigiana* spec. nov., inflorescence, app. x 1. (6 L) Flowering plant on right, app. x 0.5

New Species of *Echeveria*

By ERIC WALTHER

6. *Echeveria Craigiana* spec. nov.

"Series Amoena pertinet; plantae glabrae radicibus fibrosis, caudibus brevibus; foliis 30 vel 40, conferte rosulatis, 7-11 cm. longis, 2 cm. latis, haud papillosis, subteretibus, oblongo-linearibus, acutis, apice subulato-aristatis; inflorescentiis usque 80 cm. altis, elongato-paniculatis, pedunculis crassis, erectis; bracteis semiteretibus, usque 5 cm. longis, acutis; pedicellis usque 2 cm. longis, bracteolatis; sepalis paulum patentibus, usque 9 mm. longis, acutis; corollis rubris, cylindrico-campanulatis; petalis subcarinatis, ad basin gibbosis, apice recurvatis; squamis crassis, truncatis."

Occurrence: MEXICO. Southwest. Chihuahua.

Type: CA.; Craig & Lindsay 1939/3; near Barranca de Río Urinque (branch of Río Fuerte), at lower level back from barranca among pines and ferns, with *Graptopetalum occidentale*.

References: Cactus Journal 15:4:52, 1943: George Lindsay, "Plant Hunting in the Tarahumare Mountains of Chihuahua, Mexico."

Description: Plant glabrous; stem short or none, branching only in old specimens; rosettes very dense; leaves 30 to 40, thick, semiterete,

linear-oblong, 8 to 11 cm. long, to 2 cm. broad, flat above, beneath rounded and faintly keeled near apex, acute and shortly subulate-aristate, not papillose but slightly glaucous, upcurved from the middle; inflorescences 2 or 3, to over 50 cm. tall; peduncle stout, erect, to 10 mm. thick at base; bracts few, somewhat spreading, semiterete, oblong, acute, aristate-mucronate, to 5 cm. long and 10 mm. broad, faintly keeled near apex both above and beneath, at base shortly spurred, readily detachable; panicle elongate, with numerous short, angularly spreading branches, these at times bifid; pedicels to 2 cm. long, rigid, bracteolate when young, only slightly thickened below calyx; sepals much connate at base, slightly but distinctly spreading, subequal, longest to 9 mm. long, oblong-deltoid, acute, connivent after anthesis; corolla tubular-campanulate, to 11 mm. long and 13 mm. in diameter when fully expanded, basal diameter 7 mm.; petals bluntly keeled, at base gibbose and with distinct cavity within, strongly recurved at

apex; carpels 8 mm. long; stamens slightly longer; nectaries 2 mm. wide, thick, transversely trapezoid. Flowers October-November.

Color: Leaves sorghum-brown to natal-brown, glass-green at the shaded base; peduncle pale-pinkish-cinnamon to light-russet-vinaceous; bracts dark-olive-buff, to army-brown above; pedicels light-corinthian-red; sepals rainette-green to light-corinthian-red; corolla rose-doree, inside jasper-red; carpels whitish; styles orange-vinaceous; nectaries whitish.

Remarks: We take pleasure in naming this new species in honor of its co-discoverer, Dr. R. T. Craig of Baldwin Park, Calif. The specimen here described was grown by Jack Whitehead at the University of California Botanic Garden at Berkeley, California.

E. Craigiana is a most unusual species, both in its morphological characters and geographical distribution. In its paniculate inflorescence, small flowers and appressed sepals it recalls *E. amoena* and its allies, while in foliage and flower-color it resembles the Bolivian *E. chilense* (*E. Whitei*) in which latter, however, the panicle becomes a simple raceme at least above. *Escheveria paniculata* et al. too comes to mind, but these differ in having at least their uppermost flowers borne singly on the pseudopedicels, and in usually having fleshy, thickened roots. Provisionally at least we are inclined to place this new species into our Series *Amoenae*, where it would come nearest to *E. linguafolia*, which differs obviously in its evident, usually branching caudex, thick, blunt, green leaves and bracts, a narrower, pendent-spreading pan-

icle with shorter, few-flowered branches and paler, thinner petals; its stamens too are unusually long, nearly as long as the petals, which last have scarcely any nectar-cavity within at base.

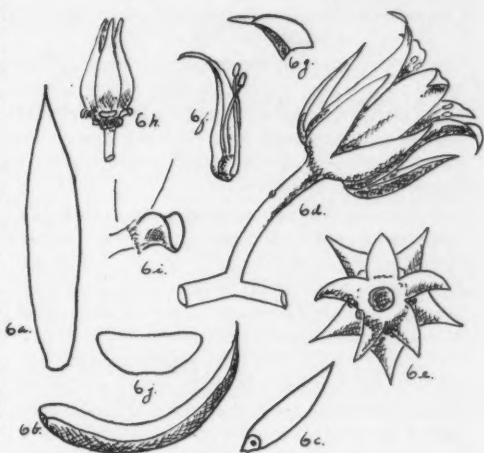


FIG. 13. (6) *Echeveria Craigiana* details:

- 6a Leaf, app. x 0.4
- 6b Leaf, sideview, app. x 0.4
- 6c Bract, app. x 0.4
- 6d Corolla, app. x 2
- 6e Calyx from below, app. x 2
- 6f Single petal, seen inside, app. x 2
- 6g Apex of petal, app. x 4
- 6h Carpels, app. x 2
- 6i Nectary, app. x 8 (side-view)
- 6j Nectary, app. x 8 (front-view)

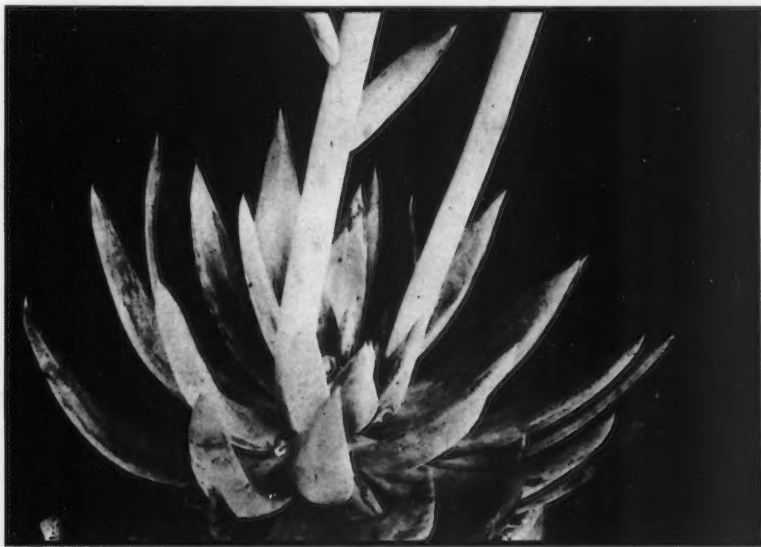


FIG. 12. (6 M) *Echeveria Craigiana* spec. nov. rosette, app. x 1.

RAISING SEEDLINGS— A DIFFERENT BUT RELIABLE METHOD!

By PROF. DR. FRANZ BUXBAUM,
Judenburg, Austria

From Nachrichtenblatt der Deutschen Kaktengesellschaft, No. 9, Nov., 1950

The "recipes" for the rearing of seedlings are always the same; apparently one author copies from another. And two ingredients are always present—failures and losses! Long ago I became disgusted with this situation and for years I have followed other ways.

I also once planted my seeds in an ingeniously constructed seed-incubator regulated by thermostat. But eventually I failed to use it and the cactus seed sprouted better than ever, and in an average room-temperature. Today I no longer worry about artificial heat!

To begin with, the soil generally used for seeds is not suitable. If there is but a trace of humus present one must continually fight fungus. Loamy soil is too heavy, and sand dries out too quickly, which is well known to be the surest method for killing germinated seed. Therefore I use the following medium: bricks are broken up (one can also pulverize it in the grinding machine that produces red sand for tennis-courts), the clumps are removed with a coarse sieve (fly-screen) and the fine sand with a fine sieve. What remains is a sand whose kernels can easily absorb and retain moisture. Moreover one can easily tell from the color if it is sufficiently moist. Not only does this medium not mold nor crust over, but it remains uniformly moist. If fungus does appear it remains localized and is easily removed, or destroyed with "Chinosol."

Fungus always appears with impure seed. Before sowing, each seed is carefully examined with a 10x lens. If any of the pulp is present this is removed by rubbing the moistened (preferably with *Uspulun*) seeds with the finger on the palm of the hand until the pulp dissolves from them and adheres to one's skin. If a seed crumbles during this treatment it is due to its being sterile, empty or dried. Soaking for 24 hours in *Uspulun* is much recommended, but sowing the seed is then very tedious.

Large seeds are planted one at a time, small ones are sprinkled about and pressed down. In all cases it has proved advisable to sift over them at least a thin layer of the finest sand, thus encouraging root penetration.

But I differ basically from the common method in another point: to prick out is to kill! This is not true for all species, but for most. It is obvious that in this early stage of development

the inevitable injury to the extremely delicate first roots and root-hairs will always mean an interruption in growth! Especially slow-growing species, such as *Echinocactus ingens* or *Astrophytum*, are very difficult due to this reason. Therefore I leave the seedlings in the seedbox, standing together in a dense mass, for at least one year. True, in this thickly-planted condition some individuals will be pressed to death by their neighbors. But this strangulation is one of the skirmishes in the "struggle for existence," and these weaklings (one might call them "casualties") would not develop healthy growth even if they were isolated. Those that survive later become fine specimens, which are the only ones that give true pleasure!

Of course the brick-sand is very poor in nutritional elements. At first this is an advantage, however; in their search for nourishment the seedlings develop unbelievably large root systems. At this stage I employ my nutrient solution,* which contains all necessary nutritional salts for the nourishment of plants, and in the correct (and therefore stimulating) proportions. Now the porosity of brick again shows its value, for the nutrient solution impregnates the brick granules and does not become washed away.

This cultural method is based on some 25 years of experience. If I attempted other ways misfortune always resulted. Whoever has enough seed—of the same species—is free to test both methods, the old and the "new." He will never again employ the old!

Translation: M. KIMNACH

CACTUS SHOW WINNER

Fred A. Eisele, a retired accountant of University City, was a sweepstakes winner at the Henry Shaw Cactus Society annual show. He won a total of 200 points including 21 blue ribbons on his 469 plants. We hope Mr. Eisele will send us some notes for the JOURNAL telling us how he grows his plants so successfully.

OKLAHOMA CACTUS AND SUCCULENT SOCIETY

Officers for 1952 are: President, Mrs. Jesse Vandenburg; Vice President, Mr. C. L. Wiese; Secretary-Treasurer, Mrs. Winnie E. Jones; Board Members, Mr. R. A. Chubb and Mrs. H. T. Daniels.

NEW SPECIES OF EPITHELANTHA

Helia Bravo Hollis described the following new species in "Anales del Instituto de Biología" Mexico, *E. spinosior* C. Schmoll, *E. densispina* Bravo, *E. rufispina* Bravo.

NEW CATALOG

Hull's Nursery, 1149 Magnolia St., Carlsbad, California, has issued a 12-page retail catalog containing 85 pictures of the more common cacti and other succulents.

*Hy Pondex is available at most seed stores.

The 1952 renewals are so gratifying that we will soon return to a monthly JOURNAL.



SPINE CHATS

LADISLAUS CUTAK



Nine years ago SPINE CHATS made their first appearance and almost instantly became a popular feature with many of the readers. SPINE CHATS were initiated solely to bring out pertinent facts about cacti and the other succulents mostly gleaned from world-wide literature which is not always readily available to the general public. SPINE CHATS also tend to bring cactus enthusiasts closer together by publishing intimate stories about people who practise our enjoyable hobby. We feel that SPINE CHATS are important to round out the well-balanced horticultural diet that the CACTUS JOURNAL offers. If you are in accord with our ideas, don't hesitate to let the editor know; if you think this page can be improved, please write us your suggestions.

* * *

Dr. Lloyd H. Shinnars describes two new xerophytes from Texas in the October, 1951, issue of *Field and Laboratory*, a publication of the Southern Methodist University. The first, *Yucca Freemanii*, is an acaulescent species with one to few heads of soft and rather limp, filamentous leaves. It is related to *Yucca arkansana* and *Y. louisianensis*. The true *Y. arkansana*, according to Dr. Shinnars, appears to be taller-growing and with softer, longer, and often wider leaves while *Yucca louisianensis* possesses densely pubescent panicle branches and finer and stiffer leaves. The newly described *Y. Freemanii* is native to northeastern Texas but its range extends into Louisiana. The second new xerophyte is *Agave lata*, related to *A. virginica* from which it differs by its shorter and narrower leaves. The flowers are said to emit a heavy spicy lilac odor. It is found in northern Texas and extends into Oklahoma.

* * *

Reid Moran describes a new species of Dudleya from Guadalupe Island, off the coast of Baja California, in the October, 1951, issue of *Madroño*. He claims this new *D. guadalupensis* differs from other species of the genus in its twisted floral stems and in its somewhat united sepals. All of the plants examined showed this character in the young floral stems and in those remaining from previous seasons. The rosettes are composed of 35-75 oblong-ob lanceolate leaves. Besides describing the new Dudleya, Moran also has Notes on the Guadalupe Island flora, from which we learn that *Euphorbia misera* is common on the crater floor and that previously it had not been reported from the island. *Mammillaria Blossfeldiana* var. *Shurliana* was also collected on the crater floor.

* * *

It is possible to propagate the sisal plant (*Agave sisalana*) by means of outer leaves from the bulbils formed in the inflorescence. Such leaves, when the lower ends were placed in water or a nutrient solution, were found to form roots within a month. When these rooted leaves were transplanted to flower pots with rich earth, buds were developed that formed normal plants. In some cases the plants so grown developed leaves without spines. This information appeared in *Bragantia*, January, 1950, issue, under the authorship of J. C. Medina and Romeu Inforzata.

* * *

The first anniversary of Henri Pittier's death occurs this month. Henri Francois Pittier was a famous

figure in the botanical world, who died on January 27, 1950, in Caracas, Venezuela. Born at Bex, near the Rhone River, in the Bernese Alps, he was educated in Swiss polytechnical schools and universities, receiving several degrees. In 1887 he went to Costa Rica and stayed 18 years, during which time he made extensive surveys, and built up a great herbarium. From 1905 to 1919 he served in the United States Department of Agriculture as botanist engaged in agricultural investigations in Central America. He explored all the countries of Central America and also Colombia and Venezuela, making extensive botanical collections and publishing the results in *Contributions from the U. S. National Herbarium*. He resigned from the U.S.D.A. to go to Venezuela, where he was recognized as the leading scientist of the country, and there he died in his 93rd year, a citizen of the United States. His bibliography includes over 300 papers on botany, forestry, Indian archeology, ethnography, and linguistics. *Opuntia Pittieri*, native to the western cordillera of Colombia, is named in his honor, as is also *Epiphyllum Pittieri*, one of the smallest flowered species of the genus, and also *Rhipsalis Pittieri* from Venezuela.

* * *

Last year we also mourned the death of Dr. Forrest Shreve, a brilliant cactologist, who passed away at Tucson, Arizona, on July 19, 1951, in his 72nd year. For many years he was head of the Desert Laboratory on Tumamoc Hill in Tucson, to which he first came in 1908. Most of his studies centered on the Sonoran and Chihuahuan deserts. Cactus folks recall him as author of the excellent book, "*The Cactus and Its Home*," published in 1931. Dr. Shreve was the second noted cactologist I met when I first began to show interest in cacti and the other succulents. It was in the summer of 1935 on my first collecting trip to the Southwest. My buddy, Art Christ, and I spent an evening in his home and later visited the Tumamoc Hill Laboratory where all kinds of physiological and morphological investigations were carried on native cacti. *Agave Shrevei* commemorates this incomparable botanist of the desert.

* * *

Serological and biochemical studies on strains of a great number of yeasts, Lactobacilli and Leuconostocs isolated from agua miel (non-fermented juice of Agave) and pulque are presented in several papers in *Anales de la Escuela Nacional de Ciencias Biologicas* (Mexico)—volume 6. It has been found that *Leuconostocs dextranicum* and *L. mesenteroides* constitute a part of the normal flora of pulque. The articles are of a highly technical nature, written in Spanish with English summaries, and authored by A. Sánchez-Marroquín, Celsa Celis, H. Balandrano and others.

* * *

The Hottentot Fig, *Carpobrotus edulis*, which is indigenous to South Africa, is widely distributed in sandy and rocky regions of the central and southern California coasts. It is a potentially good source of tannins of the catechol or phlobotannin type. The sap or the crushed leaves could be used as an emergency application in the treatment of burns and minor cuts.



NEW BOOK IN FRENCH

"Plantes Grasses" (Succulent Plants) by A. Bertrand. This 125 page book is well illustrated with 63 photographs and 23 beautiful color plates. The most popular succulents are briefly described. Price \$2.50 postpaid. The companion book "Cactees" (Cacti) was first printed in French but we are advised that an English edition is now available in England and copies have been ordered. We hope that "Plantes Grasses" will also be reprinted in English.

The United States Department of the Interior, National Park Service, Washington, D.C., announces a new publication, "Plants of Big Bend National Park," by W. B. McDougall and Omer E. Sperry. This book will be of great interest to naturalists, gardeners, teachers, and students of botany, and to visitors to the Park. It should become a valuable reference for general use on flora of the Southwest. Some of the chapters are: Types of vegetation in the park, Plant structures, Keys to families and how to use them, Families of plants, glossary, Index of scientific names, Common names, etc. There are 190 illustrations. This book is of special interest to cactus collectors for study of the plants growing in association with cacti, agaves, yuccas, ocotillos, etc. Price \$1 from Government Printing Office, Washington 25, D.C.

CEREUSLY SPEAKING—from page 23

growth needs. I then recommended some that would better suit their growing conditions as well as taking the 245 cloudy days we average around the Great Lakes.

These "pep talks" helped to show the cactophiles with lagging zeal that "in union there is strength." The letters I receive still show that the beginners in our fascinating hobby are in need of the primary information which some have forgotten long ago. I'm just as thrilled to get a well-grown *Stapelia variegata* (buffonia—"toad plant") as I was when I first got one in 1932. I've seen a promising cactophile "cut down aborning" by a thoughtless collector with the withering phrase when offered a common plant but new to the "new collector," "I had that 25 years ago." I feel that we should be very careful not to hurt anyone whether he has 3 or 3,000,000 cacti and succulents.

It would be better to accept the gift even if you "have dozens at home." Sharing plants, cuttings, offsets, etc., builds up a "Memory Collection" which to me is one of the joys of collecting. From many plants given to me, from 1928-1936, I have given back starts to the original givers, because they had lost theirs. We "moan" about the lack of interest that our friends feel about cacti and succulents but we forget that we often would like to try something but no one ever encouraged us to do so. Up to date I've started plenty of others in our hobby in my quarter of century of collecting, growing, hybridizing, repotting, experimenting, recording results of it all and then writing for 11 years about the life of a cactophile. Not interested! Look again.

This is the beginning of the 12th year of Cereusly Speaking, the diary of a cactophile and the answers to inquiries of "how do you win friends, and keep them for cacti and succulents." If you like this say so, if you don't say so for my next 5 articles are in answer to

my mail about cactus and succulent plants and my ideas about them.

JOHN E. RODGERS
1229—8th Street, Lorain, Ohio

JOHNSONS RETURN

Mr. and Mrs. Harry Johnson have just returned from an extended collecting trip in South America. We look forward to interesting reports and the resumption of the Question Page.

JANUARY SPECIALS

- Opuntia ursina* (Polar Bear Cactus)—large pads—white—cuts. 60 cents each.
 - Echinocereus robustus* (The Robust Hedgehog)—large specimens. \$1.50 each.
 - Echinocereus pectinatus* (Rare)—Nice plants. 1.80 each.
 - Carnegiea gigantea* (Arizona Giant Saguaro)—2" to 3" seedlings—nice. 75 cents each.
 - CREST—*Echinopsis multiplex*—2" to 3"—beautiful—\$1.25 each.
 - Ferocactus latispinus*—(Big-spined Barrel)—Imported—very beautiful—3" to 4". \$2.25.
- Above specimens sent postpaid—cash with order.
Minimum order—\$2.00.

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FROM MEXICO

My new Cacti Price List of 1952 has just been finished. It contains a good number of new discoveries. If you really are interested in rare Cacti, just write for my list to:

FRITZ SCHWARZ

Apartado 347 San Luis Potosi, SLP Mexico

WANTED

Established plant or so of *Euphorbia intisy* or information as to where such a plant or plants of this species can be secured.

SILVAN NURSERIES

7612 Auburn Blvd. Citrus Heights, Calif.

FIRST TEN YEARS' JOURNALS

Unbound. One of our members must sell these issues and requests that an offer be sent to the Journal office, 132 W. Union Street, Pasadena 1, California.

ENGLAND REPRESENTATIVE

The Cactus and Succulent Society of America and Abbey Garden Press have appointed Mr. E. Lamb to take subscriptions to the JOURNAL and to supply books to our friends in England. Address W. T. Neale and Co., Franklin Road, Worthing, Sussex, England.

Neale's Photographic Plates

With the new foreign rate of exchange, you may subscribe to "Neale's Photographic Plates" for \$3.00 per year. You receive at least 24 plates each year with many added features. If you are collecting pictures of cacti and succulents, you should have this fine series. Every subscription from the USA means that some collector in England will be able to subscribe to our Journal—so you render a double service by taking advantage of this new low rate. Mail your order to Cactus Journal, 132 W. Union St., Pasadena, Calif.

